

Roll No. :

Total No. of Questions : 16]

[Total No. of Printed Pages : 3

SCYS-122

M.Sc. (Computer Science) (Ist Semester)
Examination, 2021

CYBER SECURITY

Paper - MCSEC-101

(Mathematics Foundations for Cyber Security)

Time : 1½ Hours]

[Maximum Marks : 40

Section-A

(Marks : 1 × 10 = 10)

Note :- Answer all *ten* questions (Answer limit **50** words). Each question carries
1 mark.

Section-B

(Marks : 3 × 5 = 15)

Note :- Answer any *five* questions by selecting at least *one* question from each Unit
(Answer limit **200** words). Each question carries **3** marks.

Section-C

(Marks : 5 × 3 = 15)

Note :- Answer any *three* questions by selecting *one* question from each Unit
(Answer limit **500** words). Each question carries **5** marks.

Section-A

1 each

1. (i) What is Set ?
- (ii) What do you know if a graph is Planner ?

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- (iii) What is the father of Graph Theory ?
- (iv) Define prime number.
- (v) Why is number theory important ?
- (vi) What is Chinese remainder theorem example ?
- (vii) What is basic linear algebra ?
- (viii) What is the hardest math class ?
- (ix) What is the main goal of coding theory ?
- (x) Write any *five* rules of probability.

Section-B

3 each

Unit-I

- 2. What are the different types of time complexity notation used ?
- 3. What are the five uses of chromium ?
- 4. What is binary routed tree ? Explain.

Unit-II

- 5. How is Euclidean algorithm used ?
- 6. What is a lattic point in Mathematics ?
- 7. Explain Lagrange's theorem and write its applications.

Unit-III

- 8. What is Linear Algebra ? How is used in Cyber Security ?
- 9. What is the difference between Coding Theory and Cryptography ?
- 10. What is stochastic process and its classification ?

Section-C

5 each

Unit-I

- 11. What do you understand by Graph Theory ? Explain undirected graph and directed graph.

12. How many vertices does a complete graph have if there are 39916800 Hamilton circuits ?

Unit-II

13. What do you mean by theorem ? What is the relation between Fermat's theorem and Euler's theorem.
14. Does number theory have application ? If yes. Explain in detail.

Unit-III

15. What is random variable in probability ? Explain some properties of it.
16. Define Linear transformations. Explain objectives of Linear Transformations.